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EXAMINER	
TRAN, THAI Q	

ART UNIT	PAPER NUMBER
2615	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/410,751	YOO ET AL.	
	Examiner	Art Unit	
	Thai Tran	2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 December 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-20 have been considered but are moot in view of the new ground(s) of rejection.

Drawings

2. The revised formal drawings of FIGS. 4, 5A, and 5B have been received and have been approved by the examiner.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kahn et al (US 6,525,775 B1) in view of Cloutier (US 5,966,387).

Regarding claim 1, Kahn et al discloses an apparatus (digital VCR 113 of Fig. 1A, col. 3, lines 6-24) for receiving digital video signal having program clock reference (PCR) from a set top box through a digital interface (STB 90 and IEEE 1394 of Fig. 1A, col. 3, lines 6-24 and col. 7, lines 22-33). However, Kahn et al does not specifically discloses the steps of (a) detecting program clock references contained in digital transport stream packets; (b) creating the transport time reference for each transport stream packet based upon the detected program clock references and arrival times of the correspondent transport stream packet; and (c) creating transport stream units by adding each of the created transport time reference to the associated transport stream packet.

Cloutier, as discussed in the last Office Action, teaches an apparatus and method for correcting jitter in data packet (col. 4, lines 54-61) having the steps of:

(a) detecting program clock references (the PCR detector 124 of Fig. 2, col. 10, lines 27-39) contained in received digital transport stream packets;

(b) creating the transport time reference for each transport stream packet based upon the detected program clock references and arrival times of the correspondent transport stream packet (col. 10, lines 41-52 and col. 11, lines 20-47); and

(c) creating transport stream units by adding each of the created transport time reference to the associated transport stream packet (col. 11, lines 20-47). Cloutier also teaches that, although the preferred embodiment of the present invention has been described with respect to the transport of MPEG-encoded data streams in an ATM network, it will be appreciated that any coding standard can be used for the data being

transported, so long as the coded data stream includes time stamp information identifying an expected arrival time of the corresponding data packet stream segment (col. 19, lines 17-23).

Therefore, It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the apparatus of correcting jitter in data packets as taught by Cloutier into Kahn et al's system in order to increase the quality of the video signal of Kahn et al by correcting jitter in data packets of the video signal of Kahn et al.

Regarding claim 2, Cloutier discloses the claimed wherein said step (b) creates the transport time reference of each transport stream packet based upon an error, defined as the difference between the time difference of selectively inserted program clock references and the arrival time difference of transport stream packets containing the program clock references (col. 12, lines 27-54).

Regarding claim 3, Cloutier discloses the claimed wherein said step (b) increases or decreases the transport time reference by the time corresponding to said error (col. 12, lines 27-54).

Regarding claim 4, Cloutier discloses the claimed wherein said step (b) creates the transport time reference for an arbitrary transport stream packet received between two transport stream packets having program clock references by compensating the arrival time of the arbitrary transport stream packet by the amount corresponding to the proportion of the arrival time difference between the arbitrary transport stream packet and a first transport stream packet of said two packets to the arrival time difference of said two transport stream packets (col. 12, lines 27-54).

Regarding claim 5, Cloutier discloses the claimed wherein said transport time reference is the reference information upon which the timing of the transmission of the transport stream packets is based when the transport packets are transmitted to an external device after the transport stream packets are reproduced from a storage medium (col. 7, lines 9-18, col. 9, lines 44-54, and col. 16, lines 58-63).

Regarding claim 6, Kahn et al discloses the claimed recording the created transport stream units on a rewritable recording medium having a digital data recording format (digital VCR 113 disclosed in col. 3, lines 6-15).

Regarding claim 7, Kahn et al discloses an apparatus (digital VCR 113 of Fig. 1A, col. 3, lines 6-24) for receiving digital video signal having program clock reference (PCR) from a set top box through a digital interface (STB 90 and IEEE 1394 of Fig. 1A, col. 3, lines 6-24 and col. 7, lines 22-33). However, Kahn et al does not specifically discloses the steps of (a) storing digital transport stream packets together with their arrival times temporarily; (b) compensating the temporarily stored arrival time of each transport stream packet based upon the time difference of program clock references and the arrival time difference of the transport stream packets when more than two program clock references are detected from said received digital transport stream packets; and (c) creating transport stream packet as a transport time reference.

Cloutier, as discussed in the last Office Action, teaches an apparatus and method for correcting jitter in data packet (col. 4, lines 54-61) having the steps of:

(a) storing received digital transport stream packets together with their arrival times temporarily (a buffer 144 of Fig. 2, col. 11, lines 20-47);

(b) compensating the temporarily stored arrival time of each transport stream packet based upon the time difference of program clock references and the arrival time difference of the transport stream packets when more than two program clock references are detected from said received digital transport stream packets (col. 12, lines 27-54); and

(c) creating transport stream units by adding each of the compensated arrival times to the associated transport stream packet as a transport time reference (col. 11, lines 20-47). Cloutier also teaches that, although the preferred embodiment of the present invention has been described with respect to the transport of MPEG-encoded data streams in an ATM network, it will be appreciated that any coding standard can be used for the data being transported, so long as the coded data stream includes time stamp information identifying an expected arrival time of the corresponding data packet stream segment (col. 19, lines 17-23).

Therefore, It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the apparatus of correcting jitter in data packets as taught by Cloutier into Kahn et al's system in order to increase the quality of the video signal of Kahn et al by correcting jitter in data packets of the video signal of Kahn et al.

Regarding claim 8, Kahn et al discloses an apparatus (digital VCR 113 of Fig. 1A, col. 3, lines 6-24) for receiving digital video signal having program clock reference (PCR) from a set top box through a digital interface (STB 90 and IEEE 1394 of Fig. 1A, col. 3, lines 6-24 and col. 7, lines 22-33). However, Kahn et al does not specifically discloses the steps of (a) detecting program clock references from transport stream

packets while storing the received digital transport stream packets together with their arrival times; (b) detecting the stored arrival times of the transport stream packets containing the detected program clock references; (c) comparing the difference of the two program clock references detected in said step (a) with the arrival time difference of the two transport stream packets detected in said step (b); (d) compensating the stored arrival time of each transport stream packet based upon the comparison result; and (e) creating transport stream units by adding the compensated arrival time to each transport stream packet as a transport time reference.

Cloutier, as discussed in the last Office Action, teaches an apparatus and method for correcting jitter in data packet (col. 4, lines 54-61) having the steps of:

(a) detecting program clock references from received transport stream packets while storing the received digital transport stream packets together with their arrival times (col. 10, lines 32-39 and col. 11, lines 20-47);

(b) detecting the stored arrival times of the transport stream packets containing the detected program clock references (col. 10, lines 32-39);

(c) comparing the difference of the two program clock references detected in said step (a) with the arrival time difference of the two transport stream packets detected in said step (b) (col. 12, lines 27-54);

(d) compensating the stored arrival time of each transport stream packet based upon the comparison result (col. 12, lines 27-54); and

(e) creating transport stream units to adding the compensated arrival time to each transport stream packet as a transport time reference (col. 11, lines 20-47).

Cloutier also teaches that, although the preferred embodiment of the present invention has been described with respect to the transport of MPEG-encoded data streams in an ATM network, it will be appreciated that any coding standard can be used for the data being transported, so long as the coded data stream includes time stamp information identifying an expected arrival time of the corresponding data packet stream segment (col. 19, lines 17-23).

Therefore, It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the apparatus of correcting jitter in data packets as taught by Cloutier into Kahn et al's system in order to increase the quality of the video signal of Kahn et al by correcting jitter in data packets of the video signal of Kahn et al.

Regarding claim 9, Kahn et al discloses an apparatus (digital VCR 113 of Fig. 1A, col. 3, lines 6-24) for recording digital transport streams having program clock reference (PCR) received from a set top box through a digital interface (STB 90 and IEEE 1394 of Fig. 1A, col. 3, lines 6-24 and col. 7, lines 22-33). However, Kahn et al does not specifically discloses a means for detecting program clock references contained in digital transport steam packets; a means for comparing the detected program clock references with the arrival times of the transport stream packets; a means for creating the transport time reference of said each transport stream packet based upon the comparison result; and a means for constructing transport stream units by adding the created transport time reference of said each transport stream packet to the associated transport stream packet.

Cloutier, as discussed in the last Office Action, teaches an apparatus and method for correcting jitter in data packet (Fig. 2, col. 4, lines 54-61) having

a means (the PCR detector 124 of Fig. 2, col. 10, lines 32-39) for detecting program clock references contained in received digital transport stream packets;

a means (col. 12, lines 27-54) for comparing the detected program clock references with the arrival times of the transport stream packets;

a means (col. 12, lines 27-54) for creating the transport time reference of said each transport stream packet based upon the comparison result; and

a means (col. 11, lines 20-47) for constructing transport stream units by adding the created transport time reference of said each transport stream packet to the associated transport stream packet. Cloutier also teaches that, although the preferred embodiment of the present invention has been described with respect to the transport of MPEG-encoded data streams in an ATM network, it will be appreciated that any coding standard can be used for the data being transported, so long as the coded data stream includes time stamp information identifying an expected arrival time of the corresponding data packet stream segment (col. 19, lines 17-23).

Therefore, It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the apparatus of correcting jitter in data packets as taught by Cloutier into Kahn et al's system in order to increase the quality of the video signal of Kahn et al by correcting jitter in data packets of the video signal of Kahn et al.

Regarding claim 10, Kahn et al discloses an apparatus (digital VCR 113 of Fig. 1A, col. 3, lines 6-24) for recording digital transport streams having program clock

reference (PCR) received from a set top box through a digital interface (STB 90 and IEEE 1394 of Fig. 1A, col. 3, lines 6-24 and col. 7, lines 22-33). However, Kahn et al does not specifically discloses a means for creating arrival times of digital transport stream packets; a means for detecting program clock references contained in the received digital transport stream packets; a means for comparing the detected program clock references with the created arrival times; a means for compensating the created arrival times based upon the comparison result; and a means for constructing transport stream units by adding the compensated arrival times to the corresponding transport stream packets as transport time references.

Cloutier, as discussed in the last Office Action, teaches an apparatus and method for correcting jitter in data packet (Fig. 2, col. 4, lines 54-61) having

a means (the jitter calculator 168 of Fig. 2, col. 12, liens 45-54) for creating arrival times of received digital transport stream packets;

a means (the PCR detector 124 of Fig. 2, col. 12, lines 32-39) for detecting program clock references contained in the received digital transport stream packets;

a means (col. 12, lines 27-54) for comparing the detected program clock references with the created arrival times;

a means (col. 12, lines 27-54) for compensating the created arrival times based upon the comparison result; and

a means (col. 11, lines 20-47) for constructing transport stream units by adding the compensated arrival times to the corresponding transport stream packets as transport time references. Cloutier also teaches that, although the preferred

embodiment of the present invention has been described with respect to the transport of MPEG-encoded data streams in an ATM network, it will be appreciated that any coding standard can be used for the data being transported, so long as the coded data stream includes time stamp information identifying an expected arrival time of the corresponding data packet stream segment (col. 19, lines 17-23).

Therefore, It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the apparatus of correcting jitter in data packets as taught by Cloutier into Kahn et al's system in order to increase the quality of the video signal of Kahn et al by correcting jitter in data packets of the video signal of Kahn et al.

Regarding claim 11, Cloutier discloses the claimed wherein said compensating means compensates the created arrival times of the received digital transport stream packets so that the difference between the detected program clock references equals to the difference between the arrival times of the transport stream packets containing the detected program clock references (col. 11, lines 20-47 and col. 12, lines 27-54).

Regarding claim 12, Kahn et al discloses an apparatus (digital VCR 113 of Fig. 1A, col. 3, lines 6-24) for recording digital transport streams having program clock reference (PCR) received from a set top box through a digital interface (STB 90 and IEEE 1394 of Fig. 1A, col. 3, lines 6-24 and col. 7, lines 22-33). However, Kahn et al does not specifically discloses time information extractor of detecting program clock references contained in digital transport stream packets; time comparator of comparing the detected program clock references from said time information extractor with the arrival times of the transport stream packets; transport time generator of creating the

transport time reference of said each transport stream packet based upon the comparison result from said time comparator; and data constructor of constructing transport stream units by adding the created transport time reference from said transport time generator of said each transport stream packet to the associated transport stream packet.

Cloutier, as discussed in the last Office Action, teaches an apparatus and method for correcting jitter in data packet (Fig. 2, col. 4, lines 54-61) having

time information extractor (the PCR detector 124 of Fig. 2, col. 12, lines 32-39) of detecting program clock references contained in received digital transport stream packets;

time comparator (col. 12, lines 27-54) of comparing the detected program clock references from said time information extractor with the arrival times of the transport stream packets;

transport time generator (col. 12, lines 27-54) of creating the transport time reference of said each transport stream packet based upon the comparison result from said time comparator; and

data constructor (col. 11, lines 20-47) of constructing transport stream units by adding the created transport time reference from said transport time generator of said each transport stream packet to the associated transport stream packet. Cloutier also teaches that, although the preferred embodiment of the present invention has been described with respect to the transport of MPEG-encoded data streams in an ATM network, it will be appreciated that any coding standard can be used for the data being

transported, so long as the coded data stream includes time stamp information identifying an expected arrival time of the corresponding data packet stream segment (col. 19, lines 17-23).

Therefore, It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the apparatus of correcting jitter in data packets as taught by Cloutier into Kahn et al's system in order to increase the quality of the video signal of Kahn et al by correcting jitter in data packets of the video signal of Kahn et al.

Regarding claim 13, Cloutier discloses wherein said transport time generator creates the transport time reference of each transport stream packet based upon an error, defined as the difference between the time difference of the detected program clock references and the arrival time difference of transport stream packets containing the program clock references (col. 12, lines 27-54).

Regarding claim 14, Cloutier discloses the claimed wherein said transport time generator increases or decreases the transport time reference by the time proportional to said error (col. 12, lines 27-54).

Regarding claim 15, Cloutier discloses the claimed wherein said transport time generator creates the transport time reference for an arbitrary transport stream packet received between two transport stream packets having program clock references by compensating the arrival time of the arbitrary transport stream packet by the amount corresponding to the proportion of the arrival time difference between the arbitrary transport stream packet and a first transport stream packet of said two packets to the arrival time difference f said two transport stream packets (col. 12, lines 27-54).

Regarding claim 16, Kahn et al discloses an apparatus (digital VCR 113 of Fig. 1A, col. 3, lines 6-24) for recording digital transport streams having program clock reference (PCR) received from a set top box through a digital interface (STB 90 and IEEE 1394 of Fig. 1A, col. 3, lines 6-24 and col. 7, lines 22-33). However, Kahn et al does not specifically discloses transport time generator of creating arrival times of digital transport stream packets; time information extractor of detecting program clock references contained in the received digital transport stream packets; time comparator of comparing the detected program cock references from said time information generator with the created arrival times from said transport time generator; time compensator of compensating the created arrival times from said transport time generator based upon the comparison result of said time comparator; and data constructor of constructing transport stream units by adding the compensated arrival times from said time compensator to the corresponding transport stream packets as transport time references.

Cloutier, as discussed in the last Office Action, teaches an apparatus and method for correcting jitter in data packet (Fig. 2, col. 4, lines 54-61) having

transport time generator (the jitter calculator 168 of Fig. 2, col. 12, lines 45-54) of creating arrival times of received digital transport stream packets;

time information extractor (the PCR detector 124 of Fig. 2, col. 10, lines 33-39) for detecting program clock references contained in the received digital transport stream packets;

time comparator (col. 12, lines 27-54) of comparing the detected program clock references from said time information generator with the created arrival times from said transport time generator;

time compensator (col. 12, lines 27-54) of compensating the created arrival times from said transport time generator based upon the comparison result of said time comparator; and

data constructor (col. 11, lines 20-47) of constructing transport stream units by adding the compensated arrival times from said time compensator to the corresponding transport stream packets as transport time references. Cloutier also teaches that, although the preferred embodiment of the present invention has been described with respect to the transport of MPEG-encoded data streams in an ATM network, it will be appreciated that any coding standard can be used for the data being transported, so long as the coded data stream includes time stamp information identifying an expected arrival time of the corresponding data packet stream segment (col. 19, lines 17-23).

Therefore, It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the apparatus of correcting jitter in data packets as taught by Cloutier into Kahn et al's system in order to increase the quality of the video signal of Kahn et al by correcting jitter in data packets of the video signal of Kahn et al.

Regarding claim 17, Cloutier discloses the claimed wherein said time compensator compensates the created arrival time based upon an error, defined as the difference between the time difference of the detected program clock references and

the arrival time difference of transport stream packets containing the program clock references (col. 12, lines 27-54).

Regarding claim 18, Cloutier discloses the claimed wherein said time compensator increases or decreases the created arrival time by the time proportional to said error (col. 12, lines 27-54).

Regarding claim 19, Cloutier discloses the claimed wherein said time compensator compensate the created arrival time of an transport stream packets having program clock references by the amount corresponding to the proportion of the arrival time difference between the arbitrary transport stream packet and a first transport stream packet of said two packets to the arrival time difference of said two transport stream packets (col. 12, lines 27-54).

5. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kahn et al (US 6,525,775 B1) in view of Cloutier (US 5,966,387) as applied to claim 16 above, and further in view of Markandey et al (US 2002/001989 A1).

The combination of Kahn et al and Cloutier discloses all the features of the instant claimed invention as discussed in claim 16 above including the claimed whereas a clock frequency for recording the digital transport stream is 27 Mhz (col. 11, lines 11-20) except for providing that wherein a clock frequency of the digital interface is 24.576 Mhz.

Markandey et al teaches data packet transmitted through IEEE 1394 having clock frequency of 24.576 Mhz (page 4, paragraph #0064).

It would have been obvious to one of ordinary skill in the art at the time of the invention to convert digital data to IEEE 1394 packets using 24.576 Mhz clock as taught by Markandey et al into Kahn et al's system in order to facilitate the conversion of digital video signal into IEEE 1394 data packets.

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thai Tran whose telephone number is (703) 305-4725. The examiner can normally be reached on Mon. to Friday, 8:00 AM to 5:30 PM.

The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TTQ